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Notice of Allowability	Application No.	Applicant(s)	
	10/771,540	JUDET ET AL.	
	Examiner	Art Unit	
	Christopher Verdier	3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to _____.
2. ☒ The allowed claim(s) is/are 1-4.
3. ☐ The drawings filed on _____ are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date <u>4-5-04</u> | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

ABSTRACT OF THE DISCLOSURE

~~The invention relates to~~ A ventilation device for a high pressure turbine rotor in a turbomachine, the turbine comprising upstream (3) and downstream (5) turbine disks fitted with blades (4, 6), the device comprising a cooling circuit being supplied by a cooling airflow D taken from the back of the combustion chamber. ~~According to the invention, the~~ The circuit is such that the airflow passes through orifices (74) formed in an upstream flange (66) of the upstream disk, such that this airflow circulates in the axial direction towards the downstream side between an inner reaming (48) of the upstream disk and a downstream flange (78) of the downstream disk, the device also comprising a labyrinth (80) inserted between the two disks, such that the airflow is divided into a first flow F1 and a second flow circulating on each side of labyrinth towards the blades (4, 6).

Figure 2.

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mardson McQuay, Attorney for Applicants, on March 7, 2005.

The application has been amended as follows:

In the Specification:

On page 1, in the heading at the top of the page, "DESCRIPTION" has been deleted.

In the Abstract:

The abstract has been replaced by the abstract provided on a separate sheet attached to the end of this paper.

In the Claims:

Claims 1-4 have been amended as follows:

-- 1. (Currently Amended) Ventilation device for a high pressure turbine rotor ~~(100)~~ of a turbomachine, the turbine rotor ~~(100)~~ being arranged on the downstream part of a combustion

Art Unit: 3745

chamber (2) and comprising an upstream turbine disk (3) fitted with blades (4) and a downstream turbine disk (5) fitted with blades (6), said device comprising a cooling circuit fitted with injectors (36) on the upstream side of the upstream disk (3) and supplied with a cooling airflow D taken from the back of the combustion chamber (2), ~~characterized in that~~ wherein said cooling circuit is arranged such that the cooling airflow D originating from the injectors (36) passes through orifices (74) formed in an upstream flange (66) of the upstream disk (3) so that it the upstream flange of the upstream disk can be fixed on an upstream flange (78) of the downstream disk (5), so that this cooling airflow D circulates in the axial downstream direction between an inner reaming (48) in the upstream disk (3) and the upstream flange (78) of the downstream disk (5) so that it the upstream flange of the downstream disk can be fixed on a downstream flange (79) of a high pressure compressor and so that the upstream disk (3) can be centered, said ventilation device also comprising a single labyrinth (80) fixed to one of the two turbine disks (3, 5) and being inserted between these two disks, such that the cooling airflow D is divided into a first flow F1 circulating between a downstream face of the upstream disk (3) and an upstream face of the single labyrinth (80) towards the blades of the upstream disk (4), and into second flow F2 circulating between an upstream face of the downstream disk (5) and a downstream face of the single labyrinth (80) towards the blades (6) of the downstream disk. --

-- 2. (Currently Amended) Device according to claim 1, ~~characterized in that~~ wherein the injectors (36) penetrate into a cavity (64) partially delimited by the upstream flange (66) of the upstream turbine disk (3), and by an upstream seal (32) and a downstream seal (34), this

Art Unit: 3745

downstream seal cooperating with a secondary upstream flange (72) of the upstream turbine disk (3). --

-- 3. (Currently Amended) Device according to claim 1 or to claim 2, ~~characterized in that~~ wherein several orifices (86) are formed in the upstream flange (78) of the downstream turbine disk (5), so that a third flow F3 of the cooling airflow D can pass through ~~them~~ the orifices, said third flow F3 circulating in the downstream axial direction within an annular space (88) formed between firstly the upstream flange (78) of the downstream disk (5) and an inner reaming (50) of this downstream disk (5), and secondly a spacer (9) located around a rotor shaft (11) of a low pressure turbine. --

-- 4. (Currently Amended) Device according to ~~any one of the above claims~~ claim 1 or claim 2, ~~characterized in that~~ wherein the single labyrinth (80) is fixed to a secondary upstream flange (82) of the downstream turbine disk (5), in which several orifices (84) are formed through which the second flow F2 of the cooling airflow D can circulate towards the blades of the downstream disk (6). --

In the Drawings:

The following changes to the drawings have been approved by the examiner and agreed upon by applicant: In order to avoid abandonment of the application, applicant must make these agreed upon drawing changes.

Figure 1 may be labeled as -- Prior Art --.

The above change to the specification has been made to correct an informality therein. The above changes to the abstract have been made to remove objectionable language and the parentheses from the abstract. The above changes to the claims have been made to correct indefinite claim language, remove the parentheses, and eliminate improper multiple dependency of claim 4.

Reasons for Allowance

The following is an examiner's statement of reasons for allowance: the instant application is directed towards an unobvious improvement over the invention patented in U.S. Patent 5,555,721. U.S. Patent 5,555,721 discloses a ventilation device for a high pressure turbine rotor substantially as claimed. The improvement comprises the upstream flange of the upstream disk 60 being arranged such that it can be fixed on an upstream flange of the downstream disk 62, with the upstream flange of the downstream disk 62 being arranged such that it can be fixed on a downstream flange of the high pressure compressor 32. None of the prior art of record discloses or suggests the improvement.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Art Unit: 3745

Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Speak and Hull are cited to show a gas turbine engine having cooling flow through injectors and between an inner reaming of an upstream disk.


Romani (figure 1), Patel, and Glynn are cited to show a dual labyrinth upstream rotor disk flange seal.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Verdier whose telephone number is (571) 272-4824. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward K. Look can be reached on (571) 272-4820. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

C.V.
March 7, 2005


Christopher Verdier
Primary Examiner
Art Unit 3745